

Shop Safety Procedure

	Equipment/Task Name:	PANEL SAWS
	Equipment/Task Hazard Class:	4 http://ehs.yale.edu/forms-tools/tool-classification-matrix
	Shop Name:	
	Shop Hazard Class:	

Purpose

Panel saws are used to cut large sheet materials into smaller rectangular sections and pieces, often as part of an initial sizing process. They consist of a circular saw and an upright framework that supports the work piece and a track that the circular saw travels along. Unlike a table saw where the work piece is moved past the cutting blade, with a panel saw the operator moves the circular saw across the work piece, with the work piece fixed in place.

Panel saws are most commonly used with plywood and wood composites such as medium density fiberboard (MDF) and particle board. Some shops have special blades that enable the cutting of other materials such as acrylic sheets, veneered products, and other materials. Consult the shop instructor or manager for materials that are acceptable for cutting on the panel saw.

Panel saws usually have predefined minimum and maximum workpiece sizes. These are based upon the physical configuration of the panel saw horizontal and vertical tracks and the directionality of the saw configuration. Most accept standard 4 x 8 foot sheet goods and can make full length horizontal or vertical cuts in them. Depending upon whether or not the materials have a real grain pattern, these cuts can be categorized as “rip” cuts for those parallel to the grain, and as “cross” cuts for those perpendicular to the grain pattern.

Hazards

As with all shop tools there are many potential hazards associated with their use and exposure. Panel saws are Class 4 tools (<http://ehs.yale.edu/forms-tools/tool-classification-matrix>). There are a number of particular hazards associated with the operation and use of panel saws.

Kickback of Saw and/or Workpieces

- As with other types of sawing operations there is significant risk of saw kickback during cross cut operations- operators body must not be positioned above saw during crosscutting.
- During ripping operations the workpieces are subject to kickback and operators/ bystanders should not be standing in the possible path of the material.
- Care must be taken in supporting the upper cutoff during ripping operations so that it does not pinch the blade and cause kickback.

Hazards (cont'd)

Rotating Saw Blade, and Spindle

- Large amounts of energy embodied in rotating parts
- Potential for loose clothing, jewelry, hair, or other items to become entangled in rotating parts, potentially drawing operator close to or into the blade or spindle with serious consequences.
- Saw kickback is possible when doing cross cuts
- Workpiece kickback is possible when doing horizontal “rip” cutting- care should be taken that riving knife is in place and that upper cutoff workpiece is adequately supported as it travels thru the saw.

Amputation

- While the blade is reasonably well guarded on the panel saw inattention or incorrect clearing of workpieces without shutdown of saw can cause amputation of body parts.

Sharp Tooling and Edges on Workpiece

- Potential for cuts, lacerations, and puncture wounds
- Fresh cuts on work piece may produce burrs and other sharp edges

Flying /Fast Moving Objects

- Cutting activities can generate sharp flying chips.
- Workpieces, tooling, or clamps can become disengaged and rotate or be flung across the room. Insufficiently secured work pieces can be projected at high speed, potentially striking or crushing fingers, hands, or impaling an operator or bystander

Dust & Noise

- As with any cutting operation a significant amount of dust may be generated- this will be mitigated by an integrated dust collection system if available but if not personal masks should be considered.
- The noise level generated will vary greatly by equipment and materials cut- personal hearing protection should be considered in the event of prolonged cutting operations.

Limitations

- Panel saws can only make straight continuous cuts in either the horizontal or vertical axis. The thickness of the material to be cut also is limited by the material track configuration and saw – typically a maximum of 1 ¾ inches.
- Panel saws can generate significant dust when cutting and should be connected to a dust collection system or vacuum cleaner when operating.
- When set up properly panel saws should be able to maintain cuts within about 1/32” in horizontal or vertical axis.
- Workpiece material choices are generally limited to wood, wood products, and composite wood products. Plastics may require a special blade and, depending upon the cutting work, additional exhaust ventilation.
- Due to the inherent challenges of ripping on this tool extra caution must be taken when performing such cuts and only with approval from the Shop Supervisor. A Table Saw is a more appropriate tool for rip cuts.

Required Personal Protective Equipment

- Refer to the Shop Safety Postings and instructions provided by the Shop Supervisor.
- Safety glasses
- Shop specific required PPE:

Required Training

- Applicable Shop Rules
 - Student Shop Rules (<http://ehs.yale.edu/forms-tools/shop-rules-student-accessible-shops>)
 - Professional Shop Rules (<http://ehs.yale.edu/forms-tools/guidelines-professional-shops>)
- For Class 2 through 5 Student Shops, review and signing of the **Yale University Shop/Tool Use Safety Agreement** (<http://ehs.yale.edu/forms-tools/shoptool-use-safety-agreement>).
- Shop Supervisors or Instructors must evaluate the tool user based on successful demonstration of the Training Competencies listed below as applicable.

Training Competencies:

- Identify and describe all controls, adjustments, limitations and functions of the panel saw.
- Dress appropriately and wear appropriate personal protective equipment for the cutting operation.
- Correctly inspect, setup, and adjust the panel saw for all types of required cuts.
- Apply good judgment in selecting accessories for work piece and accurately position work piece for cutting operation.
- Demonstrate both rip and cross cutting
- Students must be able to reset all saw functions to square, perpendicular cuts and clean up saw in preparation for next user.

Shop specific training requirements:

Authorized Tool Users

Shop Supervisor, Shop Monitors and those authorized by shop supervision to operate the tool.

Tool Safety Rules

- Observe and follow all Yale Professional or Student Shop Rules as posted.
- Understand and follow manufacturer operating procedures.
- Inspect the tool for damage prior to use.
- Verify all guards are in place and adjusted properly.
- Do not bypass any safety devices.
- Only use the tool when it is secured to the floor and/or wall.
- Always stay at the machine while it is running.
- Clean the tool after use.
- Report any malfunction or damage to the Shop Supervisor after tagging the tool "Out of Service, do not use".
- Always disconnect the plug from the power source before making any adjustments, changing, or physically inspecting the blade.
- Never use another person as a substitute for a table extension or as additional support.
- Never make free-hand cuts by raising the work piece into the blade.
- Never cut more than one workpiece at a time.
- Never feed the workpiece into the saw or cut into the workpiece at a rate faster than it can accept.

Shop specific rules:

Proper Setup and Use

Prior to use:

- Verify that the workpiece is safe and appropriate for use on the particular panel saw.
- Consult with the shop supervisor for allowed materials and minimum/maximum dimensions for workpieces.

Proper Setup and Use (cont'd)

Prior to use (cont'd):

- Workpieces for rip cutting general need to be supported on a minimum of 4 bottom support rollers.
- Workpieces for crosscutting generally need to be wider than the carriage of the saw for proper clamping and support.
- Measure and mark the cutting location on the workpiece.
- Orient the workpiece for horizontal ripping or vertical cross cut.
- The long dimension of the workpiece will typically be horizontal.
- For ripping the smaller cutoff should be on top.
- Turn on dust collection system.
- Prepare for sawing by verifying again that any loose clothing or jewelry has been removed or secured, and hair (including beards) tied back and away.
- Ensure that the area around the saw is safe for workpiece travel and that any assistants are properly briefed on sawing operations.
- Don appropriate personal protective equipment.

At the panel saw:

Rip Cutting

- Place workpiece on lower support track/ rollers and with the saw in the upper rest position verify smooth side to side travel of the workpiece throughout the full length
- Confirm ripping direction and position workpiece on the correct side of the saw.
- Set and adjust hold-down bars/ guides for thin materials (typically less than 1/4").
- Lower saw and rotate into the crosscut orientation. Position the saw and lock at correct ripping height using the mounted vertical rip measuring tape. Use care as the saw counterbalance will place the saw under tension as the operator lowers it into position.
- Reconfirm correct in-feed ripping direction
- Plug power into saw.
- Turn on saw- allow for saw to accelerate to full speed prior to the cutting operation.
- Smoothly feed workpiece into sawblade and continue feeding at a constant speed
 - Special care must be taken as the operator and /or assistant transition from pushing the material into the blade to pulling the material thru from the opposite side of the saw. The upper cutoff will need to be supported as the cut proceeds so that it does not pinch the sawblade.
 - DO NOT USE PUSHSTICKS
- Turn off saw and allow blade to come to a COMPLETE stop.
- Remove workpieces from saw.

Cross Cutting

- Place workpiece on saw guides and ensure that it is adequately supported by a minimum of 2 roller supports- more is better. The width of the workpiece needs to be wider than the saw carriage assembly.
- Rotate saw to crosscut orientation- ensure saw lock is engaged.
- Carefully release saw rip lock as saw will be under tension from counterbalance- move saw over full range of crosscut travel to ensure freedom of movement – leave saw in uppermost crosscut position.
- Slide workpiece into proper crosscut position – use crosscut saw gauge to locate.
- Clamp/ secure workpiece at proper location.
- Start saw and allow motor to obtain full speed

Proper Setup and Use (cont'd)

Cross Cutting (cont'd)

- With a firm grip slowly bring saw down and engage workpiece at a constant speed. Continue cutting in a smooth downward motion till saw passes thru workpiece. ALWAYS CROSSCUT FROM TOP TO BOTTOM.
- Turn off saw at bottom of stroke and allow blade to come to a COMPLETE STOP before slowly – with a firm hold- allowing the saw to retract to the top retracted position.
- Remove workpieces from saw.

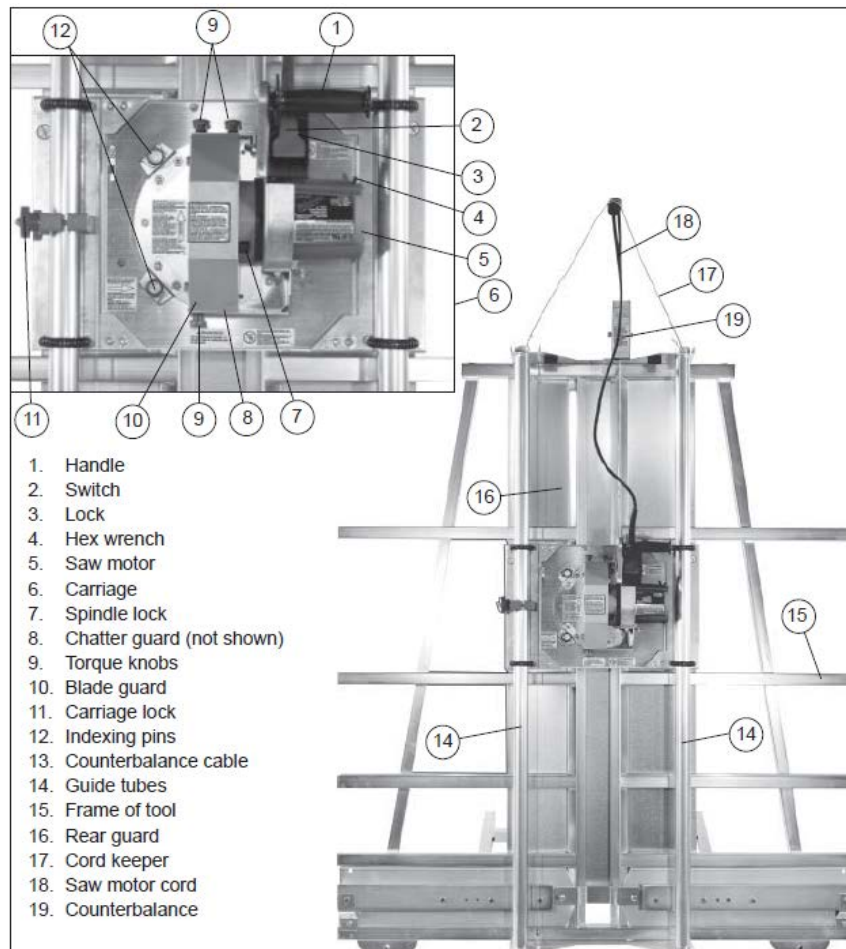
Completion:

- Allow blade to come to a complete stop.
- Disengage or turn off dust collection system (if available and as directed by shop supervisor).
- Unplug saw power.
- Remove clamps from workpiece –if used.
- Ensure all materials and cutoffs are removed from saw/ track/ guides.
- Clean any sawdust from panel saw and surrounding area.
- Be sure saw is in the upper retracted position ready for the next user
- Report any issues to the shop supervisor.

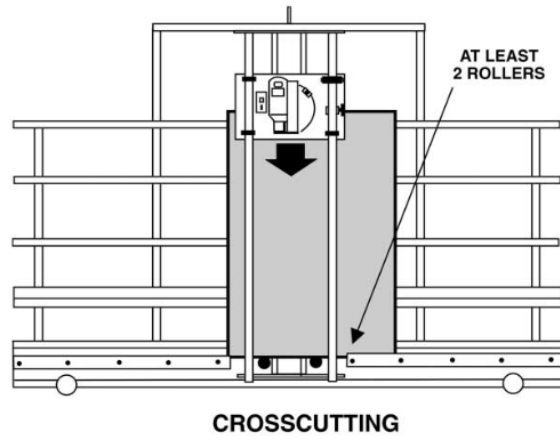
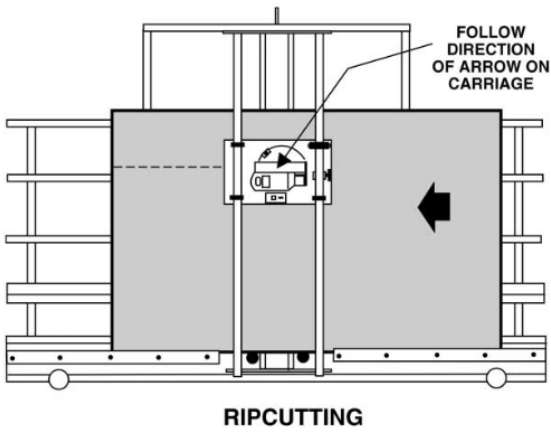
Shop specific procedures:

Diagrams/Illustrations

Panel Saw Components



Illustrations for Rip and Cross Cutting



Creation/Revision Dates:

July 2, 2014

Suggestions, questions, or comments? Please contact your shop supervisor or EHS.